REMARKS

In paragraph 1 of the Office Action it is indicated that an RCE was filed and that Applicant's submission filed on March 11, 2004 has been entered.

In paragraphs 2 and 3 of the Office Action claims 13-29 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-26 of copending Application No. 10/611,240. Applicant will provide a terminal disclaimer following the conclusion of prosecution related to the other grounds of rejection set forth in the Office Action, as discussed below.

In paragraph 4 of the Office Action new art of interest is identified including Vijayen et al. (2003/015746 A1).

In paragraph 5 of the Office Action claims 13-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, stating:

> "The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
>
> See section 2 of the 11/7/03 rejection, and the advisory action, section 2 for previous discussion of this rejection. On pages 11-12 of the 1/7/04 response, applicants cite pages 10 and 11 as having support for "at least one subsequent carbon ion beam energy of greater than approximately 50eV", however the examiner did not find this entire range there. Page 11, lines 11-12 do teach "ion beam energy in excess of approximately 100 eV", so only $\leq$ 100 eV is covered by this disclosure. Page 10, lines 18-23 and p. 11, lines 8-9 teach using [approximately] 10eV, then 50 eV, then 100 eV, but nowhere was any teaching to use energies between approximately 50 eV and approximately 100 eV found. Nor was there any teaching of achieving the desired effect of this application, by never using C ion beams at values of approximately 100 eV or greater, as is included by this amended range. All disclosure using ~50 eV as one beam, also had a subsequent beam of ~ 100 eV. Nor does the specification provide for 100 eV followed by 50eV, which is also within the scope of the amended ranges. All multi step examples were limited to using successively higher energies. Therefore, while the claims as written encompass the disclosure in the specification, they are broader than the scope of the original enabling disclosure, hence contain New Matter."

Responsive to this ground of rejection, Applicant has amended the claims to more clearly define the invention. Initially, with regard to the carbon ion beam energy ranges set forth in the specification, and claims, Applicant makes particular reference to page 11, lines 8-10 of the specification which state:

> "While the example provided hereabove demonstrates the use of a three step (10 eV, 50 eV, 100 eV) ion beam energy gradient, it is to be understood that the present invention can be practiced utilizing a two step gradient, a multiple step gradient, and a smooth energy gradient."

Applicant urges that one skilled in the art will understand that this sentence is discussing an ion beam energy range of from 10 eV to 100 eV that may be applied in a three step ion beam energy gradient (10 eV, 50 eV, 100 eV) or a smooth energy gradient which will be understood to be an ion beam having an energy gradient that varies smoothly from 10 eV to 100 eV. This smooth energy gradient ion beam therefore includes all, each and every energy level of an ion beam between 10 eV and 100 eV, and would be so understood by one skilled in the art. Additionally, a multiple step gradient would be understood by one skilled in the art to use multiple different (to achieve steps) energy levels between 10 eV and 100 eV, and a two step gradient would have two energy levels between 10 eV and 100 eV. Applicant therefore urges that the specification is enabling to one of ordinary skill in the art for all energy levels between 10 eV and 100 eV as well as two, three, multiple step gradients and a smooth energy gradient between the 10 eV and 100 eV ranges.

Additionally, the specification contemplates energy levels in excess of 100 eV, as stated in page 11, lines 11-12, stating:

> "Additionally, ion beam energy levels in excess of 100 eV are contemplated, although there appears to be little advantage to ion beam energy levels in excess of approximately 100 eV."

Applicant therefore respectfully submits that the energy levels set forth in the claims are amply supported by the specification as would be understood by one of ordinary skill in the relevant art, and that the claims are not broader in scope than the specification.

In paragraph 6 of the Office Action claims 13-17 and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Falabella (5,763,087), in view of Ueda et al (5,776,602), and

optionally Schmidt et al. (5,750,210), as discussed/applied in section #4 of paper #9 (3/31/03) and in section 4 of the action mailed 11/7/03, stating:

> "As noted the advisory action, the steps in claim 13 do not restrict the extent of the penetration in a determinable manner, without outside information, and while claim 22 only requires implanting already deposited DLC in the initial thickness, this would have been expected from Falabella's col. 5, Ex. 3 teachings combined with Schmidt et al (previously discussed). In these claims as written, whether or not the subsequent C ions penetrate thru the initial deposit and implant the substrate, is not an issue."

Responsive hereto, Applicant has amended independent claims 13 and 22 to further distinguish the teachings of the prior art. Specifically, claim 13 has been further amended to reflect that the carbon ion beam energy is increased from step to step, and that carbon ions from steps following an initial thickness portion of said DLC layer do not penetrate into the magnetic media layer. Claim 22 has been likewise amended to add the limitation that substantially none of the carbon ion beam species from the increased energy level carbon ion beams become implanted within the magnetic material layer. Applicant therefore respectfully submits that the claims, as amended, recite subject matter that is patentable over the teachings of the prior art references.

In paragraph 7 of the Office Action it is indicated that Applicant's arguments filed January 7, 2004 have been considered but are not persuasive. Applicant appreciates the Examiner's consideration thereof.

Additionally, in paragraph 7 of the Office Action it is indicated that claims 18-19 would be allowable if the obviousness double patenting is over come, and if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. It is further indicated that claims 27-29 would also be allowable if the obviousness double patenting rejection is overcome.

Responsive thereto, other than for the obviousness double patenting rejection, Applicant submits that claims 18-19 have been placed in condition for allowance due to the amendment of the independent claim 13 and claim 16, from which they depend. As indicated above, Applicant will provide a terminal disclaimer upon resolution of the written description requirement and obviousness rejections set forth in the Office Action.

Having responded to all of the paragraphs of the Office Action, and having amended the claims accordingly, Applicant respectfully submits that the claims are now in condition for

allowance upon the submission of a terminal disclaimer. Should the Examiner have any questions or comments with regard to this amendment, a telephonic conference at the number set forth below is respectfully requested.

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Respectfully submitted,

Dated: October 29, 2004

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I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313.

October 29, 2004
(date)

(Signature of Patricia Beilmann)